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$$+8nr[(\tfrac{3}{2}r^2+2cr-ac-c^2)\cos^{-1}\left(\frac{c}{r}\right)+(a-2r-c)\sqrt{(r^2-c^2)}]$$

$$+8nr[(\tfrac{3}{2}r^2+2cr-bc-c^2)\cos^{-1}\left(\frac{c}{r}\right)+(b-2r-c)\sqrt{(r^2-c^2)}]$$

$$=2\pi r[ab-(a-2r)(b-2r)]+8nr[(3r^2+4cr-(a+b)c-2c^2)$$

$$\cos^{-1}\left(\frac{c}{r}\right)+(a+b-4r-2c)\sqrt{(r^2-c^2)}].$$

Let S be the number of rectangles, ab, then the probability required is, $P=Sn_4\div 2\pi rSab=n_4\div 2\pi rab=\{\pi[ab-(a-2r)(b-2r)+4n[(3r^2+4cr$ $-(a+b)c-2c^2)\cos^{-1}\left(\frac{c}{r}\right)+(a+b-4r-2c)\sqrt{(r^2-c^2)}]\}\div\pi ab.$

PROBLEMS.

24. Proposed by F. P. MATZ, M. Sc. Ph. D., Professor of Mathematics and Astronomy in New Windsor College, New Windsor, Maryland.

The average area of the triangle formed by three perpendiculars drawn from the sides of the triangle (a, b, c), is $\mathbf{A}=(a^4+b^4+c^4)/48\Delta$.

25. Proposed by G. B. M. ZERR, Principal of High School, Staunton, Virginia.

The probability that the distance of two points taken at random in a given convex area A shall exceed a given limit (a) is

$$\Delta=\frac{1}{3A^2}\int\int(C^3-3a^2C+2a^3)dpd\theta,$$

where C is a chord of the area, whose co-ordinates are p, θ; the integration extending to all values of p, θ, which give a chord $C>a$. What is Δ when the area is a circle? If in the circle $a=r=$radius $\Delta=\frac{3\sqrt{3}}{4\pi}$.

INFORMATION.

PROFESSOR ARTHUR CAYLEY DEAD.

The Distinguished English Mathematician Passes Away at Cambridge.

LONDON, Jan. 31.—Prof. Arthur Cayley, of the University of Cambridge, died to-day, in the seventy-fourth year of his age. He had been for thirty-two years Sadlerian professor of pure mathematics at Cambridge, and was regarded by educators everywhere as one of the three greatest of co-temporary mathematicians, the others being Professor Sylvester, of Oxford, and Professor Klein, of Goettingen.

Before becoming a professor at Cambridge he had been for fourteen years a conveyancer at Lincoln's Inn, London. He had been educated at King's College, London, and at Trinity College, Cambridge, where he graduated as senior wrangler in 1842, and was shortly after elected a fellow.

The scientific writings of Professor Cayley relate to every branch of pure mathematics beside dynamics and astronomy.

The honors which the dead mathematician received from his own university and other universities, from English and foreign societies and from foreign governments can be numbered by the score and include honorary degrees, medals, fellowships and other honorary positions. The French government in 1890 made him an officer of the Legion of Honor, and he was also a correspondent of the French Institute and the winner of the Copley and Royal medals from the Royal Society, of which he is a fellow.

The higher education of women was one of the many practical problems in which he was interested, and for a number of years he had been chairman of the association to which belongs Newnham College, at Cambridge.

AT THE JOHNS HOPKINS UNIVERSITY.

By request of Professor J. J. Sylvester, Professor Arthur Cayley, the Sadlerian professor of pure mathematics of Cambridge, England, was associated in the mathematical work of the Johns Hopkins University, from January to June, 1882. Professor Sylvester, now the Savilian professor of Geometry in the University of Oxford, England, was then at the head of the Department of Mathematics in the Johns Hopkins University; and the presence in Baltimore, at the same time, of two of the most distinguished of the world's mathematicians, attracted much attention throughout the country. Professor Cayley was present at a number of university receptions given in his honor, and was also widely entertained in a social way. His portrait at the university was placed in a prominent position yesterday when the news of his death was received, and appropriately draped with black.—F. P. MATZ.

P. L. Tchebichef, member of the St. Petersburg Academy of Science, died Dec. 8th last, at the age of 74. Dr. Halsted has written a biography of this great mathematician, which will appear in the March number of the MONTHLY.

On February 1, G. H. Harvill, Tyler, Texas, will begin the publication of a Monthly School Journal, "*The Investigator.*" This new journal is to be devoted to Elementary Mathematics, English Grammar, History, Geography, Philosophy, etc. The price of the Journal will be $1.00 per year. The editors of the MONTHLY extend a hand of welcome to this new periodical and wish it abundant success.

Dr. George Bruce Halsted has just received a letter from Dairoku Kikuchi, Member of the House of Peers of Japan, Professor of mathematics in the Imperial University of Tokyo, Japan, in which he says:

> I desire to acknowledge with many thanks your translation of Professor Vasiliev's Address. The Russian original I received some time ago, but I regret that I could not read it. Your Bolyai ought to have been printed here long ago, but owing to unavoidable circumstances has been delayed. It will be ready, however, in a week from now, and then I shall send you some copies at once.
>
> We are fighting the battle of Civilization against the Chinese, and with easy success which even the most sanguine of us had scarcely expected before the war began."

[It may be remembered that the Japanese issued for their own use, in English, a beautiful edition of Dr. Halsted's Lobachevsky, and asked permission to issue his Bolyai.]

The publication of the weekly journal *Science* was resumed January 1st, 1895, under the charge of an editorial committee, of which Simon Newcomb represents mathematics. Professor J. McKeen Cattell of Columbia College, Editor of the Psychological Review, in asking Dr. Halsted to give an account of an Italian and German work, adds: "You are probably the only eminent man of Science in America who reads Russian, so any report of recent scientific work from Russia would be very acceptable." The MONTHLY is proud to have the illustrious name of Dr. Halsted on its list of contributors.

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EDITORIALS.

THIS number of the MONTHLY was mailed Feb. 13. The February number will be issued as soon as possible.

DR. HALSTED'S article on Non-Euclidean Geometry was cut short this month owing to sickness in his family. February MONTHLY will contain the usual number of pages devoted to that wonderful department of mathematics.

THE last two lines of problems 43, pp. 12 and 13, should go to the top of page.

WHAT THEY SAY OF THE MONTHLY.—W. I. Taylor, Instructor in Mathematics, Baldwin University, Berea, Ohio, says: I am so well pleased with the MONTHLY and have received so much help from it, that I feel that I ought not to do without it....Dr. Alexander Macfarlane, Ithaca, N. Y., says: The December number of the MONTHLY has just arrived to-day. I congratulate you upon the success of the first volume. I shall endeavor to give you what assistance I can and I think that the MONTHLY deserves the support of the professors and teachers of mathematics.